PATENT SPECIFICATION (11) 1299727

1299727

DRAWINGS ATTACHED

(21) Application No. 58667/69 (22) Filed 2 Dec. 1969

(31) Convention Application No. 134152 (32) Filed 20 Dec. 1968 in

(33) Italy (IT)

(45) Complete Specification published 13 Dec. 1972

(51) International Classification H01H 21/84

(52) Index at acceptance

H1N 442 44Y 45X 56X 735

(54) ROTARY SELECTOR SWITCH

(71) We, LA TELEMECCANICA ELETTRICA OFFICINE MECCANICHE RIUNITE SOCIETA PER AZIONI, an Italian Company, of Via Montefeltro 8, Milan, Italy, do hereby declare the invention for which we pray that a patent may be granted to us and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to a rotary selector switch of the so-called "double-cam" type, and one switch of this kind is described in United Kingdom Patent Application No. 3309/67, (Serial No. 1,173,092).

In such a device, it is necessary to limit the rotation of the control knob between two extreme positions and to this end said control knob has a protuberance which engages end stops in the form of pins removably accommodated in front seats provided therefor in the upper portion of the fixed body of the device. The use of said pins, however, gives rise to difficulties.

The principal object of the present invention is to provide means for limiting the extent of rotation of the control knob in such a device without resorting to additional devices such as the removable pins mentioned above.

Accordingly, the present invention consists in a rotary selector switch which comprises two coaxial face cams which are rotatable by a control knob and are fast with one another for rotation within a fixed body and cam followers maintained in contact with one of the cams under the influence of a spring and capable only of axial movements under or against the influence of said spring, said cam followers being caused by rotation of said cams to engage locating portions of the profile of said one cam which both correspond to predetermined angular positions of the other of said cams and are associated with particular conditions of an electric circuit, two of said locating portions extending substantially perpendicular to the direction of rotation of said cams so that rotation of said one cam is stopped by abutment of said perpendicular locating portions against said cam followers.

The present invention will now be more particularly described with reference to the accompanying attached drawings, in which:—

Figure 1 is an axial section of a rotary selector switch taken along line A—A of Figure 2, said device including two coaxial cams;

Figure 2 is a cross section of said device taken along line B—B of Figure 1;

Figure 3 is an axial section of said device taken along line C—C of Figure 4;

Figure 4 is a cross section of said device taken along line D—D of Figure 3;

Figure 5 is a diagrammatic plane developed view of the two cams fast with each other; and

Figure 6 is a view similar to that of Figure 5 of alternative cams.

Referring to the drawings, there is illustrated therein a rotary selector switch of the double-cam type having a fixed body 1, a control knob 2 for the actuation of the device, and two coaxial cams 3, 4 which are fast with each other. The cams 3 and 4 and the knob 2 are connected to one another in a conventional manner.

An annular washer 7a has two ears 7 which extend radially outwardly in diametrically opposite directions and which are integral with said washer. The washer 7a can freely slide on the hub 2b of the handgrip.

The free ends of the two ears 7 project into corresponding axially extending grooves 1b which are formed in the fixed body 1. One end of a helical spring 8 abuts against a dished central portion of the washer 7a and the other end thereof is accommodated in a recessed seat 1c formed in the fixed body, and the function of the spring 8 is to keep the two ears 7 in contact with the cam 3.

As can be seen from Figures 5 and 6, the ears 7 can assume or be caused to assume three distinct positions 3a, 3b, 3c with respect to the cam 3. In the case of the embodiment represented in Figure 6 said positions are stable, whilst in the case of the embodiment

[Price 25p]

represented in Figure 5 they are unstable. In turn, the cam 4 has distinct shapes or profiles which correspond with said positions 3a, 3b, and 3c.

As can be seen from Figures 5 and 6, the cam 3, at two positions which correspond with the desired extreme positions of the control knob 2, of the device, has two walls 10, 11 which extend in directions substantially perpendicular to the direction of rotation of the cam itself. In this way, rotation of the control knob 2 beyond said extreme positions is prevented.

In order to limit the rotation of the control knob 2 between end positions different from those defined by the cam 3, the control knob is provided with a boss 2c which extends axially of the device into a groove formed in a wall 1d of the fixed body 1, namely, the wall in which the recessed seat 1c is formed. Blind holes 1e are drilled in the wall 1d at the bottom of said groove and said holes are intended to receive removable pins 9, against which the boss 2c of the control knob 2 will abut when said knob is rotated. In Figure 4, only two holes 1e have been illustrated but each hole accommodates a pin 9. In practice, more holes could be provided and the spacing of the pins 9 from one another and from the cam walls 10, 11 or the spacing of a single pin 9 from said cam walls 10, 11 could be varied to achieve the desired effect.

It will be appreciated that the ears 7 on the annular washer 7a act as cam followers.

WHAT WE CLAIM IS:—

1. A rotary selector switch which comprises two coaxial face cams which are rotatable by a control knob and are fast with one another for rotation within a fixed body and cam followers maintained in contact with one of the cams under the influence of a spring and capable only of axial movements under or against the influence of said spring, said cam followers being caused by rotation of said cams to engage locating portions of the profile of said one cam which both correspond to predetermined angular positions of the other of said cams and are associated with particular conditions of an electric circuit, two of said locating portions extending substantially perpendicular to the direction of rotation of said cams so that rotation of said one cam is stopped by abutment of said perpendicular locating portions against said cam followers.

2. A rotary selector switch constructed, arranged and adapted to operate substantially as hereinbefore described with reference to and as illustrated in Figures 1 to 5 or Figures 1 to 4 and 6 of the accompanying drawings.

For the Applicants
G. F. REDFERN & CO.,
St. Martin's House, 177 Preston Road,
Brighton, Sussex, BN1 6BB, and
Chansitor House, 38 Chancery Lane,
London, W.C.2.

Reference has been directed in pursuance of Section 9, Subsection (1) of the Patents Act, 1949, to patent No. 1,173,092.

Printed for Her Majesty's Stationery Office, by the Courier Press, Leamington Spa, 1972.
Published by The Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.

1299727 PLETE SPECIFICATION
3 SHEETS This drawing is a reproduction of the Original on a reduced scale
Sheet 1

Fig. 1.

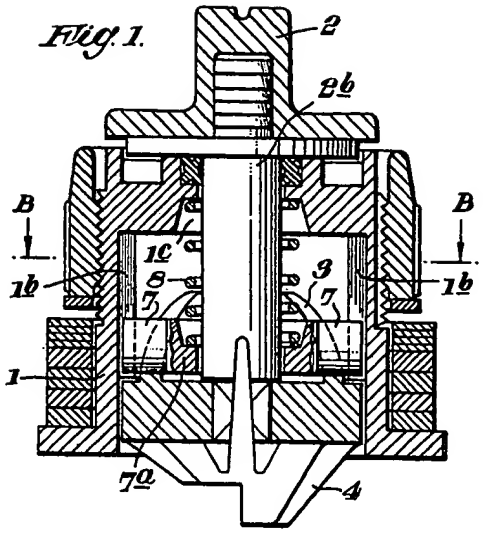


Fig. 2.

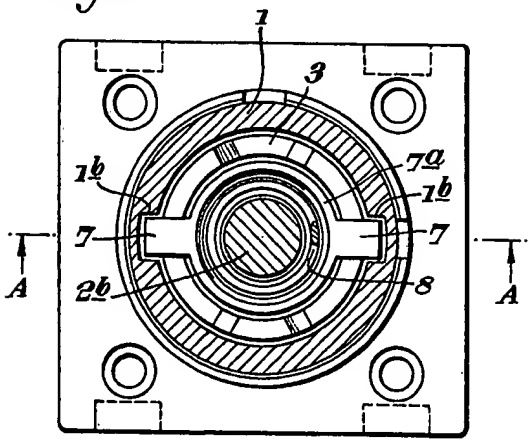


Fig. 3.

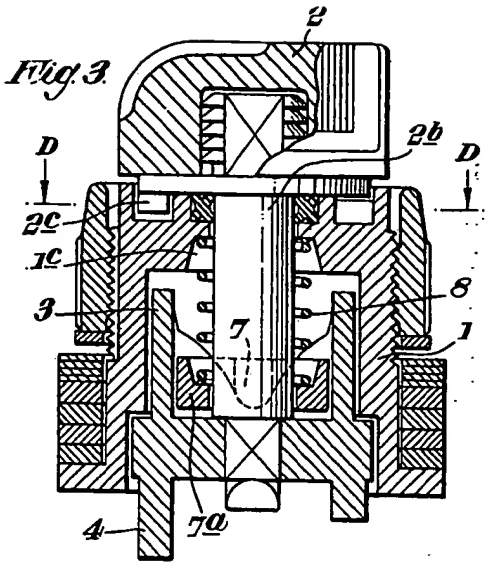


Fig. 4.

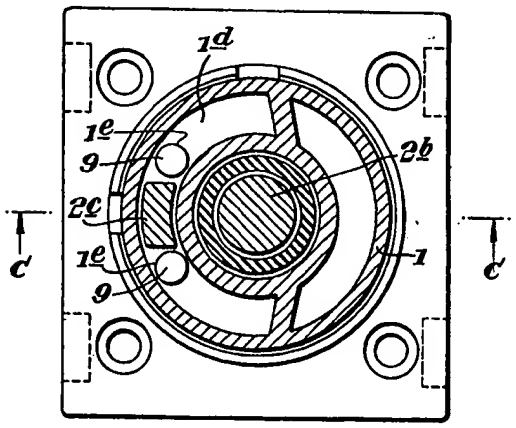
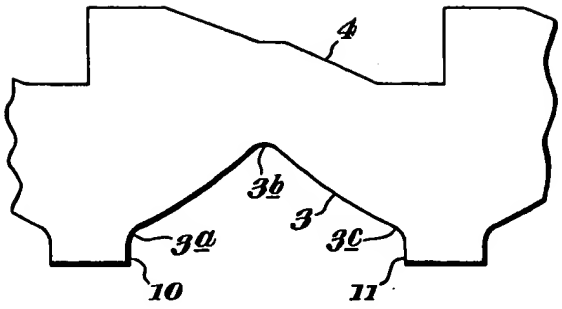


Fig. 5.



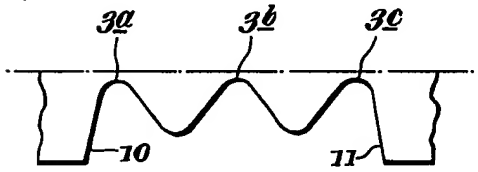


Fig. 6